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Effect of Tramp Shipping on Container Terminal Performance of Apapa and Onne Ports in Nigeria

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Abstract: This study examined the effect of tramp shipping on container terminal performance of Apapa and Onne ports, Nigeria. Tramp shipping served as the independent variable or predictor variable. Also, container terminal performance served as the key dependent variable or criterion variable under which the measures such as cargo throughputs and vessel turnaround time have been appraised. The population of the study consisted of the staff in the two ports (Apapa,636 and Onne, 277), that is 913 staff and the study sampled 279 respondents out of which 222 of them were found useful and valid for the study analysis. The study collected data with the help of a structured questionnaire. The study used Pearson Products Moment Correlation Coefficient (r) to test the hypotheses with the aid of SPSS 22.0. The reliability of the research instrument was tested using the Cronbach alpha to ascertain the reliability of the instrument. The study found that tramp is a veritable platform for effective shipping operations. Conclusively tramp shipping has a positive and significant relationship with cargo throughputs of Apapa and Onne Ports and tram shipping has a positive and significant relationship with vessel turnaround time of Apapa and Onne Ports. Therefore, the study recommends that port operators' performance should be appraised constantly in order to ensure that the maritime sector is positioned to achieve the stakeholders' objectives in Nigerian ports.
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Introduction

Shipping is a global service industry that by general acknowledgement provides the lifeline of international trade. Suffice it to say that, due to the morphology of our planet, 90% of international trade takes place by sea. Technological developments in ship design and construction, and the ensuing economies of scale of larger ships, have also promoted trade – particularly those of developing countries – by making economical the transportation of goods over long distances. This has expanded markets for raw materials and final products and has facilitated the industrialization of many countries around the world. Often, international ocean transportation and information and communication technologies are referred to as the two basic ingredients of globalization (Okeudo, 2013).

Traditionally, the shipping industry is categorized in two major sectors (markets): the bulk shipping sector – engaged mainly in the transportation of raw materials such as oil, coal, iron ore and grains – and the liner shipping sector (involved in the transportation of final and semi-final products such as computers, textiles and a miscellany of manufacturing output). From a market structure point of view, the two sectors are as different as they could be bulk shipping uses large and unsophisticated ships, such as tankers and bulk-carriers, to transport goods in bulk on a contract basis. The service requires minimal infrastructure, and in this respect, it resembles a taxi service whereby the contractual relation between passenger and driver (cargo owner and ship owner) expires upon the completion of the trip. The industry is highly competitive with prices (freight rates) fluctuating wildly even in the course of a single week (Nyama, 2014).

Consequently, many maritime nations involved in international seaborne trade constantly evolve strategies and invest significant resources to improve performance in port terminals. In most developing countries, port improvement efforts have been hampered by lack of public finance and managerial resources. These challenges have been exacerbated in the environment of globalization of production and distribution, technological changes in ship design, and cargo handling methods, which have induced considerable demand on port resources. Thus, to provide funding and management philosophy needed to reposition ports in line with the new challenges, the port administration of most countries opted for

reforms in the port sector. The focus of these reforms was on identification of optimal financing and managerial models for public ports based on national peculiarities and reform objectives ((Nyama, 2014).

Just as the shipping industry's usefulness, efficiency and overall performance is evaluated in the light of total logistics services rendered to the ships, crews, importers and exporters satisfactions, so also the usefulness of the seaports is relate to the entire economy in terms of revenue generation, foreign exchange, employments, ship and cargo throughput, vessel turnaround time etc. on the other, the number of customers to a commercial organization determines the viability of the enterprise; likewise, the volumes of ship traffic to a port determine the prosperity and economic life of the port (Okorigba, 2008).

Shipping forms the backbone for the international modern economy, and while it is very cost effective in terms of unit cost and emissions per ton-miles when compared to any other mode of transport, it is far from being pareto-optimal or eco-friendly, as it still uses massive amounts of dirty heavy fuel oil to propel the raw materials, commodities and products around the world. That being said, there is a lot that can be done to improve the overall energy efficiency and reduce the environmental impact of shipping (Njoku, 2009).

There was no adequate cargo handling equipment, incompetent manpower, lack of technical knowhow and inadequate funds for port development. The era of concession has wiped those experiences and has given the ports a fresh look (Okeudo, 2013). The shipping industry in Nigeria is said to be performing better than before the reforms.

However, comparatively, it is still obvious that there is no competitiveness among the ports. Some ports are still performing below expectation in spite the concession of the ports. The research is focused on comparative analysis of the effect of shipping operations on container terminal performance in Nigerian ports using eastern port (Onne port) and western port (Apapa port) as model ports for the comparison.

Conceptual framework

From the literature, we have examined the constructs being investigated in this study. The two main variables are shipping operations and container terminal performance, which are the independent and depended variables respectively. The dimensions or the predictor variables are tramp ship and liner ship. The dependent variable has its measures as cargo throughputs and vessel turnaround time. The conceptual framework is diagrammatically displayed below:

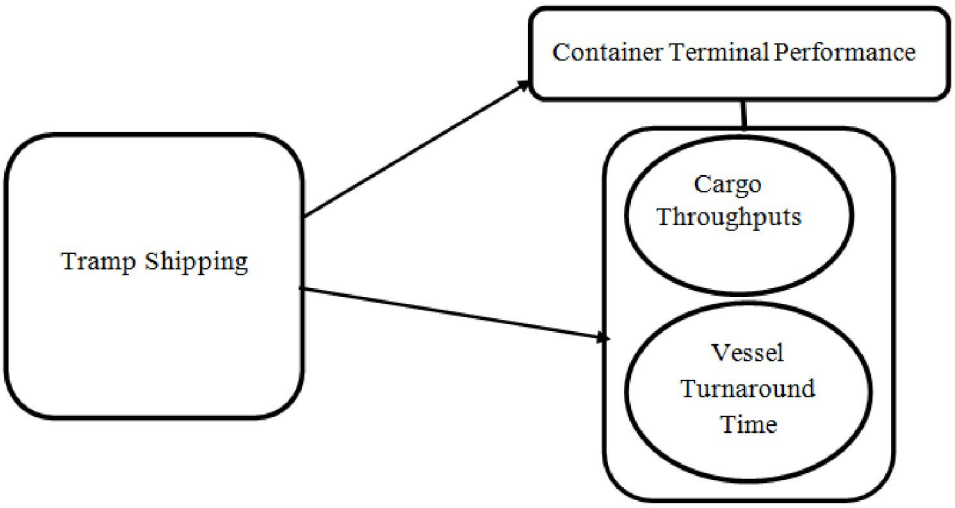

Figure 1.1: Conceptual Framework of the effect of tramp shipping on Container Terminal Performance of Apapa and Onne ports

Source: Onyema, H. K, Ahmodu K and Emeghara, G. C. (2015). Comparative Analysis of Port Performance in Nigeria: A Study of Ports in Rivers State International Journal of Business and Management (pp.100-107). Retrieved from www.theijbm.com. on March. 24, 2019

Purpose of the study

The purpose of the study is to evaluate the effect of Tramp shipping operations on container terminal performance of Apapa and Onne Ports. In line with above, the study seeks to achieve the following specific objectives:

i. Determine the extent to which tramp shipping affects cargo throughputs of Apapa and Onne Portcargo throughputs of Apapa and Onne Port.

ii. Ascertain the extent to which tramp shipping affects vessel turnaround time of Apapa and Onne Ports.

Research questions

The following research questions shall be answered in this study:

i. To what extent to does tramp shipping affect cargo throughputs of Apapa and Onne Portcargo throughputs of Apapa and Onne Port?

ii. To what extent to does tramp shipping affect vessel turnaround time of Apapa and Onne Ports?

Research Hypotheses

The following hypotheses shall be tested in this study:

Ho_1: There is no significant relationship between tramp shipping and cargo throughputs of Apapa and Onne Ports.

Ho_2: There is no significant relationship between tramp shipping and vessel turnaround time.

of Apapa and Onne Ports.

Literature Review

This chapter has been used to review the literature relevant to the study. To achieve the literature review objective, the study critically examined the theoretical foundation of the study such as queuing theory, general system theory and port simulation model. Also, the literature review has captured concepts like- shipping operations, tramp shipping, Liner shipping, container terminal performance in Nigeria, cargo throughputs, vessel turnaround time, empirical studies and area of the study as well as the summary of the literature review with evidence of gaps in literature.

Theoretical Framework

This study examines the effect of port operations on container terminal performance of Apapa and Onne Ports in Nigeria. In this section, the theoretical framework underpinning the study has been explored. Theories such as: Birth-and-Death Process Theory, General System Theory and Port Simulation Model have been x-rayed in this section.

Queuing Theory on Port Congestion (Birth-and-Death Process Theory)

In the context of queuing theory (Ogunsiji, 2011), the term birth refers to the arrival of a new customer into the queuing system, and death refers to the departure of a served customer. Only one birth or death may occur at a time: therefore, transitions always occur to the "next higher" or "next lower" state. The rates at which births and deaths occur are prescribed precisely by the parameters of the exponential distributions that describe the arrival and service patterns (Yap & Lam, 2013). The state of the system at time t ($t \geq 0$), denoted by N (t), is the number of customers in the queuing system at time t. The birth-and-death process describes probabilistically how N (t) changes as t increases. More precisely, according to Yusuf (2017) the assumptions of the birth-and-death process are the followings:

Assumption 1. Given N (t) = n, the current probability distribution of the remaining time until next birth (arrival) is exponential with parameter λ_n (n = 0, 1, 2…).

Assumption 2. Given N (t) = n, the current probability distribution of the remaining time until the next death (service completion) is exponential with parameter (n = 1, 2,…).

Assumption 3. The random variable of assumption 1 (the remaining time until the next birth) and random variable of assumption 2 (the remaining time until the next death) are mutually dependent. Furthermore, an arrival causes a transition from state n into sate n+1, and the completion of a service changes the system's state from n to n-1. No other transitions are considered possible. This birth-and-death process illustration as shown in the figure 2.1 leads directly to the formulae that measure the performance of this queuing system.

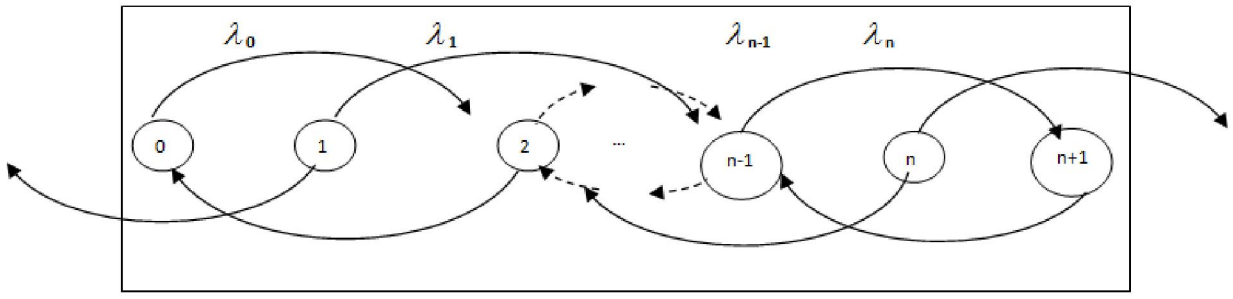

Figure 2.1: Rate Diagram for the Birth-and-Death Process

Source: Yeo, G., Pak, J. & Yang, Z. (2013). Analysis of dynamic effects on seaports adopting port security policy. *Transportation Research Part A: Policy and Practice*, 49, 285-301

A fundamental flaw in the birth-and-death process structure is a reliance on equilibrium between birth and death rates. This assumes the overall population shall remain constant at long run (Yeo, Pak. & Yang, 2013). The approach is based on the rate-equality principle (Yang, 2010) or balanced population model.

Rate-Equality Principle states that the rate at which a process enters a state n **(≥0)** equals the rate which the process leaves that state n. In other words, the rate of entering and the rate of leaving a particular state are the same for every state.

Rate in = rate out principle (Tongzon, Chang & Lee, 2009)**.** This principle implies that for any state of the system can be expressed by an equation which is called the balance equation for state n (n = 0, 1, 2…), and mean entering rate = mean leaving rate.

Onyema, Ahmodu and Emeghara (2015) article pointed out the application of Queuing theory to curb port congestion problem at Tin Can Island Port in Nigeria. Okorigba (2008) observes that there are many queuing models that can be formulated and used to analyze problems of port congestion. The port management was using queuing model to handling the vessels berth on the modality of First Come First Serve (FCFC) which helps to reduce dwell time, and ship turnaround time. It was advised the model to be tailored with computer systems and information technology in assigning vessels, berths and cranes.

Tramp shipping

Tramp services concern the non-regular, maritime transport of bulk cargo that is not containerised, and include a range of economically important services, such as the transport of oil, agricultural and chemical products. Without international trade, there would be no reason for the tramp [shipping] to exist (Okorigba, 2008)

Tramp is a derivative from old Middle English verb *trampen*, “to walk heavily”, from circa 1388. The meaning attached to ships is from around 1880, while the more common use for promiscuous woman" is as late as from 1922. There are many definitions to be found e.g. online, such as any ship which does not have a static schedule or published ports of call and “steamship which takes cargo wherever it can be traded (Ogunsiji, 2011). In this context it is not purposeful to go deeper into etymology.

More detailed definition for *tramp shipping* can be found, for example, in the since repealed EU competitive regulation the transport of goods in bulk or in break- bulk in a vessel chartered wholly or partly to one or more shippers on the basis of a voyage or time charter or any other form of contract for non-regularly scheduled or non-advertised sailings where the freight rates are freely negotiated case by case in accordance with the conditions of supply and demand *(*Lee, Wang & Miao, 2008).

Tramp shipping – contrary to liner shipping – is not operated on scheduled or previously advertised routes, but rather as a function of supply and demand – mostly on a very global market. Tramp shipping markets are highly complex, as the demand for tramp shipping services are driven by multitude of factors closely connected to markets for raw materials, semi-refined products and finished goods and demand fluctuations in these (Nyama, 2014). Some of these fluctuations are explained by the seasonal variations in production and consumption, while some are driven by geo-political and other reasons. The tramp carrier has the following characteristics features (Okeudo, 2013):

1. Tramp carrier is primarily designed to carry the simpler and homogeneous cargo in huge quantity. It is, therefore, designed to completely utilize it carrying capacity for carriage of one type of cargo.
2. Since one kind of homogeneous cargo is to be handled, a tramp will have the comparatively simple equipment. Bulk cargos are normally loaded and discharged by mechanical equipment, elevators, pumps, etc.
3. Because of the comparatively low unit value of commodities carried, a tramp will be operated at the lowest possible cost. This objective can be achieved by operating ships having relatively less speed by fitting less expensive propelling machinery.
4. A tramp generally carries cargos of one or two ship users. Hence, loading and discharging are confined to a few ports.
5. Tramp carriers do not have a fixed route and predetermined schedule of departure as it is to be engaged by one/two users as and when their need arises.
6. Tramp carrier offers services at terms and conditions, including freight/hire charges, which are not fixed and given but are negotiable.

The basic characteristic of a tramp shipping is the provision of heavy but essential infrastructure and superstructure (offshore cranes - gantries, cranes, warehouses and equipment, sheds etc) at the disposal of private operators. Put differently, besides the administration and development of land the Port Authority creates the tools and rents them to various port operators. It is argued that the authority's interference is necessitated by the need to guarantee the installation of efficient and the right equipment as well as forestall monopoly by certain operators (Okorigba, 2008). The Port Authority maintains and repairs the structures and the staff of the port management operates the handling equipment. Other stevedoring activities onboard vessels, quay apron and on the terminals such as pilotage and towage services

etc are executed by the private companies contracted to by shipping agents. Therefore, the participation of private companies is limited. The tramp shipping is organisation between two extremes: the service and landlord ports systems, hence, double entity operates during handling operations. Secondly, there exists double owning of equipment, a possible source of induced conflict (Onwuegbuchulam, 2012). The Port Authority owns the infrastructure, the superstructure and heavy equipment, rents it to operators which carry out commercial operations, and retain all regulatory functions.

Container Terminal Performance in Nigeria

That transport is central to development and civilization does not appear to have been appreciated in Nigeria as much it has been in many advanced nations. In concrete terms, transport is the ingredient for the socio-economic and political development of any nation. Development and transport are synonymous hence transport is the landmark of a developed nation. Man, is the center of universal activities and is always in constant movement in order to organize other activities and sustain his life needs. Based on this, man has directly or indirectly moved products, materials and services from points of less demand to areas of higher demand. This has resulted in the expansion of national and world trades (Eniola, 2014). These unaccomplished goals of man had always led him to search for solace outside his environment. This ultimate search or unfulfilled goals and the burning desire to improve on his well-being as a man, had indeed led to the development of maritime operations. This in turn, has enhanced international trade between widely separated nations, involving an exchange of goods and money transfer in the process (Chioma, 2011).

Comparatively, available cost figures have shown that maritime transport is the cheapest mode, for the transportation of bulk cargo, James and Gylfi (2007), in a study of transportation of same by sea offered British steel the cheapest modal cost on freighting. Indeed, for a third world: country's port [as in Nigeria], the port helps to achieve greater functionalities and efficiency in operation, and that imports and exports passing through it benefit from cheap and economically competitive port charges (Kim & Park, 2004)), since the maritime transport services have strong relative connection's with port activities, it is pertinent to state that the degree of economic development in maritime industry depends wholly or partly on the average wailing time of vessels and the berth occupancy rate (Kaisar, Pathomsiri & Haghani, 2006)

To achieve this measure of success, there is need for the presence of geophysical facilities, available technology and back up human resources (Levinson, 2006). These geophysical attributes should come as a policy frame work, supported by clear objectives and goals. These include safe channel and port policies etc. Apart from the physical conditions of available technology to provide safe port, it is equally important that the management of port should be trained personnel and provide adequate facilities to ensure quick turn round time of ships. These could be achieved through availability of general cargo handling equipment. Adequate berthing space for generality of trade handled by the port, adequate communication systems, and the development of good inter model interface for the movement of goods i.e. Evaluation and forwarding of consignments. In addition, specialized infrastructural facilities are very necessary to cope with the emergence (Chioma, 2011).

Demand for sea transport services is necessitation by a variety of geographical and economic factors, which result in raw materials to be moored from their resources to manufacturing sites spread around the globe. World trade, as it affects shipping operations, is therefore likely to average four percent growth per annum in the medium term (Eniola, 2014). Ideally, the capacity utilization for our port could be estimated in 85% but currently, it operates at 55% due to government policy inconstancy on our ports, (Chioma, 2011). Meanwhile, Bichou (2011), said that, ship building capacity is under pressure, as owners clamour for new vessels to meet the said demand.

Specifically, the essence of maritime transportation is principally to facilitate the shipping activities by providing avenue through which large quantity of goods can be transferred from one place to another, with the help of water/mode. In order to realize the principal motive for the use of maritime transportation four important elements are necessary and these elements actually constitute transport system (Huynh, 2009). A system can be described as a group of interrelated objects interacting to form a complete whole. In order words, it constitutes discreet components known as subsystems.

These subsystems include the vessels or vehicles, the way, the motive power and the terminals. These have strong relationships to both maritime operation and port services. The link between both of them are dependent on the stated subsystem (Eniola, 2014). The sub-systems to a very large extent have helped in commenting the already existing relationship between maritime and port operations. To this end, there is no way the four sub-systems of maritime activities will not exhaustively be discussed in terms of port reforms (concessioning) without the harmonization of port services or its attendant operations, in the context of port reform it is evident that both maritime and port operation work hand in hand and are inseparable to a

very large extent. This has been indeed evidenced in the exploration of the benefit of shipping services, as reflected in the nation's local cottage industrial growth and economy (Holt & Winston, 2009).

Having identified the landlord port system as the most suitable structure for modernization of our ports, envelopment of the sector, and for involving private investment therein, it would be necessary to look at the practical steps to be taken towards granting concession of a port or part thereof. Negotiation is a wide area on which a lot has been written, public sector negotiations however have certain factors that we can narrow down on, it is prudent to treat fundamental aspects of negotiation in the following arrangements. According to Eniola (2014), negotiation principle (should be taken very seriously. He reiterated the place of communication.

The foundation of good negotiation is good communication, negotiations are best done in face to face meetings, where all the elements of communication must be turned and skillfully deployed for instance, while an invitation for bids from multinational port operators could be made in foreign newspapers and be tailored in such a way as ftp command attention of prospective investors, one might not be taken as seriously as he should be, if he ultimately negotiate the terms of such a billion dollar deal in Inappropriate appearance itself being only one of the very many elements of effective interchange.

Negotiation is about the balance of proper, perceived or government by its nature has power. Thus, there is a strong presumption in private-public collaboration (such as presented by the port reform agenda), that the government is the stronger partly. Apart from the natural association of government with power, because in port concession the government is the party that invites various prospective operators to take up leases, government is naturally perceived to be the stronger party in the bargain, since it is the one making the call.

Before the advent of port concession (1956-2005), the Nigerian port system suffered from numerous ills which included the following: The turnaround time for ships was too long and usually calculated in weeks, sometimes months, depending on the cargo being loaded or discharged; Cargo-handling plants and equipment owned by the NPA were few and mostly unserviceable leading to shipping companies hiring these machines from private sector sources after having paid NPA; Dwell time for goods in ports was prolonged due to poor port management and as a such overtime cargo filled the most active seaports leading to port congestion; Labour for ship work was held in the vice-grip of wharf overlords who controlled dockworker unions and supplied less than the manpower paid for. This fraud, which became accepted by the maritime community lasted for years and was usually perpetrated to extract maximum revenue from helpless ship owners and their agents without minding how this impacted on the Nigerian economy and the already dented image of the Nigerian seaports. As a result of the compounded problems, the Nigerian seaports were rated as one of the costliest seaports in the world. Consequently, it adversely affected the patronage of our seaports (Njoku, 2009).

Bert (2008) also opined that the ills that bedeviled Nigerian ports before port concession in 2006 includes long turnaround time for ships, insecurity of cargo, unproductive labour force in NPA, multiple government agencies in the port, corrupt practices and excessive charges.

Bakshi, Flynn and Gans (2011) held that Africa accounts for less than one percent of world container traffic. An extra 2,200 TEU vessel service from Europe to a small country in the West and Central Africa sub-region would have a 27 percent market share whereas a 5,500 TEU vessel from the Far East to Europe would potentially generate a 3.6 percent market share taking into account market size. For shipping lines, port turnaround time has become an increasingly important factor to decide which port to call in the world. One extra day at a port costs more than US$35,000 to a shipping line for a 2,200 TEU vessel. He therefore suggested the need for reform.

Ndikom (2010) stated that many port premises and quay aprons had fallen to disuse and failed road sections inside the ports made movement of goods within port grounds cumbersome and very slow. Following the seaport congestion, complaints of untraceable or missing cargoes were being regularly lodged against the NPA, all to no avail. Security inside Nigerian seaports was compromised by the relentless ingress of multitudes of all shades of persons into the seaports. As a result, miscreants called wharf rats easily gained access into the ports and pilfered goods in storage or vehicle parts. In fact, security within port grounds was at the mercy of an elusive racket.

James and Gylfi (2007) were of the view that the Sub-Saharan (SSA) Africa has been slower than some other regions to embrace private participation. By the late 1990s, only 10 percent of SSA's ninety main ports involved private participation beyond stevedoring services. By 2006, that situation had begun to change with concessions concluded for container and general cargo terminals in Tanzania, Cameroon, Madagascar, Mozambique, and other SSA countries.

The raison d'etre of this paper is to assess the difference in the port performance during the pre and post concession eras, appraise the measures adopted by the concessionaires to bring about the change and to make recommendations based on the findings. The scope of this work covers all the exiting ports as at the

time of this research. The evaluation parameters were based upon port performance indicators such as indicator of output (throughput) and indicator of service (ship turnaround time).

Cargo Throughputs

It is worthy of note that average cargo throughput from 1956 to 2005 is 14,467,024 metric tons while the average cargo throughput from 2006 to 2012 is 67,240,231.86 metric tons. The yearly average cargo throughput of 67,240,231.86 metric tons of cargo from 2006 to 2012 over the yearly average of 14,467,024 metric tons from 1956 to 2005 shows a percentage increase of 456.69%. This shows the remarkable progress made in our port developmental efforts since the port concession era. In a nutshell, the pattern in Nigerian port traffic during the pre-concession era is sinusoidal while the post concession experienced a sharp progressive rise. The statistics on Table 2 shows that the cargo throughput increased from 46,150,518metric tons in 2006 to 77,104,738metric tons in 2012. This means that between 2006 and 2017, cargo throughput at the nation's ports increased by over 67 per cent. This was as a result of the landlord model of port management which was adopted in 2006 that led to the concession of sections of the ports to private terminal operators, otherwise called concessionaires, and has led to the consistent improvement in cargo throughput (Bakshi, Flynn & Gans, 2011).

Table 1: Cargo Throughput at Nigerian Ports (Pre- & Post Concession)

YEAR	INWARD	OUTWARD	THROUGHPUT
1961	1,386,480	1,356,480	2,742,960
1962	1,620,195	1,552,752	3,172,947
1963	1,680,222	1,419,552	3,099,774
1964	1,823,506	1,720,356	3,543,862
1965	2,110,440	1,482,901	3,593,341
1966	2,256,453	1,374,263	3,630,716
1967	2,350,087	1,664,431	4,014,518
1968	2,387,446	1,631,560	4,019,006
1969	2,527,730	1,830,576	4,358,306
1970	2,640,672	2,037,828	4,678,500
1971	2,853,627	1,997,834	4,851,461
1972	2,428,106	1,753,800	4,181,906
1973	2,272,681	1,562,887	3,835,568
1974	2,177,611	1,661,517	3,839,128
1975	2,719,518	1,507,964	4,227,482
1976	4,492,152	2,816,851	7,309,003
1977	5,281,466	2,831,638	8,113,104
1978	4,459,164	3,103,075	7,562,239
1979	5,256,724	3,218,696	8,475,420
1980	5,979,492	2,461,934	8,441,426
1981	8,481,284	2,518,241	10,999,525
1982	11,853,063	2,552,183	14,405,246
1983	15,694,964	2,419,808	18,114,772
1984	17,395,286	2,679,951	20,075,237
1985	15,600,380	2,356,815	17,957,195
1986	20,728,974	2,913,742	23,642,716
1987	20,073,797	2,537,432	22,611,229
1988	16,394,509	2,346,700	18,741,209
1989	12,372,417	2,278,685	14,651,102
1990	13,453,939	2,947,740	16,401,679
1991	9,851,059	2,423,520	12,274,579
1992	9,288,006	2,249,584	11,537,590
1993	7,773,258	3,402,088	11,175,346
1994	8,759,961	4,616,226	13,376,187
1995	9,338,801	6,830,356	16,169,157

1996	11,021,521	6,819,380	17,840,901
1997	13,414,501	5,487,925	18,902,426
1998	12,897,955	5,739,047	18,637,002
1999	9,579,969	4,281,879	13,861,848
2000	9,289,971	3,983,082	13,273,053
2001	10,224,300	5,251,001	15,475,301
2002	11,213,624	5,369,181	16,582,805
2003	14,286,864	5,038,854	19,325,718
2004	15,751,331	6,481,605	22,232,936
2005	19,230,496	9,702,384	28,932,880
2006	24,668,791	11,271,901	35,940,692
2007	35,544,965	35,544,965	57,473,350
2008	41,195,616	23,177,133	64,372,749
2009	45,757,149	20,018,360	65,775,509
2010	46,928,848	29,815,879	76,744,727
2011	52,022,105	31,439,592	83,461,697
2012	46,222,127	30,870,498	77,092,625
2013	50,005,603	28,276,031	78,281,634
2014	53,771,183	31,180,744	84,951,927
2015	48,111,361	29,276,277	77,387,638
2016	43,470,646	26,894,390	70,365,036
2017	43,099,088	28,436,548	71,535,636
TOTAL	913,471,484	468,416,622	1,368,271,526

Source: Nigerian Ports Authority (1961-2017)

Table 1 shows the inward cargo trend from 1961 to 2017. It follows the same pattern like the cargo throughput trend. The trend of cargo throughput follows the same pattern as import trend. It means then that the trend of cargo throughput is greatly determined by the trend of import or inward cargo movement. In a nutshell, the pattern in Nigerian port traffic during the pre-concession era is sinusoidal while the post concession experienced a stable and continuous growth as indicated with the blue line. The trend concurs with that witnessed in total cargo throughput which is clear evidence that the pattern of Nigeria's port traffic is controlled by imports. During the period 1961-2017 import traffic overwhelmed exports. Table 1 also, shows the outward cargo trend from 1961-2017 the export trend was analogous which means there was no improvement in export activities. However, small improvement was recorded from 1971-1974 with a slight upward tilt of the trend line. The situation reversed to the parallel trend from 1975-1987. This means that there was a downward tilt of the trend line. The period 1988-1999 witnessed a slight improvement in export activities with a slight upward tilt of the trend line while the trend line experienced a sharp upward movement from 2000-2017.

Table 1 shows the volume of cargo throughput handled at the Nigerian ports from 1956 to 2012. Cargo throughput is the sum of both the inward and the outward cargo processed by the ports in the given period. There was a slow growth in cargo traffic from 1956 to 1974; and the fall noticeable in-between 1966 and 1970, as a result of the civil war, was not enough to utterly obscure the growth trend. The rise in traffic between 1975 and 1979 was significant although the rise began in 1970. The abrupt rise was not preceded by port development sufficient enough to handle the traffic. The result was the 1975-1978 congestion problems which stemmed from the massive importation of cement called 'cement armada' and other construction material for the rehabilitation of infrastructure destroyed by the civil war. Traffic dropped from 20,075,237 metric tons in 1979 to 17,957,195 metric tons in 1980, peaked again in 1981 and then suffered serious decline that coincided with the global economic recession. This downward trend can be ascribed to the austerity measures introduced by the then government with the view to revamping the ailing economy. The downward trend continued for about nine years with the total cargo throughput in 1989 falling to 13,376,187metric tons. The traffic picked up again in 1990 only for a brief period as it fell during the county's political uncertainty of 1992 and 1993. Since 1996 there has been a rapid rise in cargo throughput culminating in an unprecedented volume in 2016 with a slight decline in 2017.

Vessel Turnaround Time

Turnaround times directly impacts port container performance from both economic and operational

point of view (Maduka, 2004). The higher the turnaround time the lower the container performance and the higher the port congestion. In this case, the salient feature of any port is to optimize its throughput and eventually to decrease the turnaround times of vessels or ships.

The vessel or ship turn-around time is an accumulation of the two critical times, ship service time at berth and waiting time or the time the ship spends in port from its arrival within the limits of the port up to its departure (Guan & Yang, 2010). Based on statistics provided by KTO for the last two and a half years, 1999-2001, ships' turn-around time was equivalent to the ships' service time at berth as there was no waiting time. This indicator is one of the most common measurements of port performance in the world because the survival of ports totally depends upon the satisfaction of the ship-owner its primary customer. The shortest ship turn-around time is the most advantageous for the ship-owners because their profits are highly influenced by the time spent in port. Thus, the shorter the staying time of ships in ports the higher the profit. Based on Emeghara, Theophilus and Nwoloziri (2018) time in port is 35 approximately 18% of distribution of port expenses, see table 2.3 below. Ship turnaround time however includes waiting time, manoeuvring time between the entrances to the berth or mooring point, ship service time at berth, shifting time between berths and manoeuvring time to leave the port.

Table 2: Number and Gross Registered Tonnage(GRT) Of Vessels That Entered All Nigerian Ports:2007-June2018

Year	No. of Vessels	Gross Registered Tonnage
2007	4,849	84,806,792
2008	4,623	89,505,702
2009	4,721	90,603,611
2010	4,881	106,689,553
2011	5,232	122,614,716
2012	4,837	120,818,683
2013	5,369	130,628,057
2014	5,333	148,323,065
2015	5,014	141,250,703
2016	4,373	134,066,547
2017	4,292	130,357,357
*JAN - JUNE2018	2,008	64,886,427

Source: Nigerian Ports Authority(2007-2018)
* Provisional Figure

Table 2 Distribution of Port Expenses 0% 10% 20% 30% 40% 50% 60% 70% Port dues Pilotage Tow Boatage Handling Time in port Source: Lecture Notes, Bernard Francou • Waiting Time Waiting time is the time when a ship arrives in the port area and is waiting for an available berth. Due to the stringent pre-planning, the terminal knows in advance the vessels that will arrive and as such plan the berthing of vessels accordingly. Because of this the terminal is not presented with surprises and over the last six months in 2000 no vessels had to wait to be berth. Another factor is that the average daily vessel arrival ranges from 2.4 to 4.7 vessels per day, which is less than the number of berths available, see Table 2 below. Even during the peak days Mondays and Tuesdays, the terminal comfortably handles the vessels calling. Obviously, waiting time at KTO is outside the terminal's jurisdiction as shipping lines must arrange better scheduling of their mainliners so that feeder vessels do not have to wait to be served.

Empirical Studies (Shipping Operations and container terminal performance)

Nyema (2014) in his study of factor influencing container terminals efficiency at Mombasa Port; it revealed that factors such as inadequate quay/gantry crane equipment, reducing berth times and delays of container ships, dwell time, container cargo and truck turnaround time, custom clearance, limited storage capacity, poor multi-modal connections to hinterland and infrastructure directly influencing container terminal inefficiency/port congestion. Data were analyzed by using the Statistical Package for Social Sciences (SPSS) and Microsoft Excel 2013. It was revealed the same problems facing Dar es Salaam Port which needs comprehensive strategic plan to alleviate. Refas and Canteen's (2011) in their World Bank research report on "Why Does Cargo Spends Weeks in Africa Ports" the case study of Douala, Cameroun pointed out that, the ports efficiency is attributed by improving berths operations, clearance procedures,

timely handling of ships, truck operations, gates operations and behavioral change of the players.

This improvement would necessitate the reduction in dwell times leading to the smooth movement of cargo within and outside the port area. The study also proposed that for the port congestion to be alleviated there should be modernization of customs administration. But in Dar es Salaam port the situation is still the unconformity persist due to the unilateral planning and operations at the port. Raballand et al (2012) in his study on why do cargo spend weeks in sub-Saharan African ports argued that the primary indicators of operational performance in ports are dwell, ship turnaround time and port through put. Raballand et al. (2012) used a mix of databases, individual questionnaires, and aggregated statistics from customs agencies and terminal operating companies in eight countries. While this phenomenon has been pertinent for a long time, other criteria such as asset performance are also widely used to compare berth, yard, or gate performance of different ports. Arvis (2010), in the study of long duration of container stays in the port using the study of different ports in Africa it identified the unpredictability of cargo dwell time as a major contributor to trade costs because shippers need to be compensated for the uncertainty by raising their inventory levels. Laine and Vepsalainen (1994) in their report pointed out that it is possible to organize containers at the port to allow very high traffic rates, but there are several problems involved in the optimization of service facilities and scheduling of congested queuing networks. This situation causes low utilization of large ships and of port and land transportation facilities while occasionally leading to thousands of containers congested at the port.

Paixao and Marlow (2003), argue that most of researchers conduct in port container performance is based on quantitative measures. Efficiency is very crucial in determining moves per hour for loading and unloading of container from and into the vessel. Where by productivity lays on as measurement for container moves per hour for every vessel. The researcher determines port efficiency by using Regression model. However, JIT replaces inventory and makes use of information available which attributes towards a better chain management. The result was differed by Esmer (2008) in his study on performance measurements of container terminal operations in Turkey who's emphasized on the role played by the gates operations. Gates operations involve the two operations which are export delivery by the freight forwarders and import receiving from the yard. Gates operations depend solely on the gates utilization which aims at facilitating the smooth outgoing and incoming to and from the port. Proper gates utilization leads to efficient terminal operations. Acciaro and Serra (2013) said that port capacity is all about 'velocity'. The faster the freight moves, the more the port facilities can handle on a fixed resource base. By making a better use of existing facilities, ports could avoid time consuming and difficult new development. This approach is obvious, however, ports like Dar es Salaam cargo outlet facilities such as railways operated far below the expected performance and hence called for more space to keep containers either in the port or in Inland Container Deports (ICDs). Velocity is simply distance over time Wards farther said, "at sea container freight moves at 25 knots. For example, to cover a distance of 6300 miles from Hong Kong to Los Angeles can take 11 to 12 days. But this is not the final destination, because of some constraint; this velocity will be reduced when it comes to inland transport. All the while that the container is moving at low speed, it is consuming valuable port and urban resources which are berths, terminal yards, urban roads and regional high ways. The slower it moves the more it consumes time". Therefore, we have to attack the velocity problem at all points simultaneously so that each element of the transport chain is capable of taking up the strain as neighboring links are improved (Emeghara, Theophilus & Nwoloziri, 2018).

Acciaro and Serra (2013), in the study of long duration of container stays in the port using the study of different ports in Africa identified the unpredictability of cargo dwell time as a major contributor to trade costs because shippers need to compensate for the uncertainty by raising their inventory levels. In other words, delay is not the only issue of importance when considering the impact of dwell time on the performance of trade; predictability and reliability of cargo dwell times are equally important because they have major impact on the total costs of trade logistics. Yeo, Pak and Yang (2013), in their study 'analysis of dynamic effects on seaports adopting port security policy found port authority itself can not comply with all issues such as the process of unloading or loading containers from and to the vessels, store it and conduct all procedure of clearing the containers exit at the port. They also need to allow other private firms to assist them with clearance of cargo at the port so as to increase the speed of cargo clearance to avoid congestion at the port. Government Port Decongesting Committee Report (2008) also analyzed the effects of port congestion and gave some suggestions to curb velocity problem such as extended gate hours, off- dock container yard, fast rail shuttle, integrated maritime and rail movement, and high-speed gates. However, none of the above approaches is sufficient by itself to relieve ports from congestion in a significant way.

Okeudo, (2013) infers that Ports around the world play strategic roles in the development of domestic and international trade of any country whether it is a developing or developed country. Furthermore, that in a globalized world where distances are becoming squeezed, ports play an active role in sustaining the economic growth of any maritime nation.

Prakash, (2005) added that in the modern world of a fast-growing technology, ports are playing the role of an industry, not just passive actor in transportation but also in complete supply chain management and this is why it is said that "ports are more than piers" that is, more than just infrastructure or a complex infrastructure. It is essential that ports provide efficient, adequate and competitive services to the satisfaction of ship-owners and other port users including the concessionaires and host nations particularly in terms of revenue generation (Okeudo, 2013). If the ports fail, ship-owners who may see the ports too costly or too slow would likely not find it beneficial doing business in such an unproductive port. They will definitely go elsewhere to have their desired satisfaction. Hence if ports do not provide cost-effective services, imports will cost more for consumers and exports will not be competitive on world markets, national revenue will decline as well the standard of living of all people.

Chioma, (2011) argued that ports are not only functioning as a logistics chain in transportation for inter-change, but they function as a self-sustaining industry that is linked with domestic and international trade. At some places, ports also act as a foreign exchange earner not only in the form of transshipment or hub port but as part of supply chain management by providing other logistics services to the industry. That is why a port needs to be treated as an industry rather than just a pier.

The effective performance of any port is essential as it functions as the main access and interface for shipping activities and plays integral roles in the logistics chain and as well as the determinant of the profitability of any given port or shipping port, hence, need to be managed efficiently to enhance overall profitability in the logistics activities (Nwoloziri, 2016).

Research Methodology

The research design applied in this study is the case study research design. The obtained data will be treated in a logical and statistical way. The case study method emphasizes quantitative analysis whereby data is collected through questionnaire, interviews, or from existing documents for example. The case study approach gives a 'compact scenario' of a particular situation at a certain point in time. Hence, the research is conducted at one specific moment in time which means it can be qualified as a cross-sectional study. This type of time horizon is will used because of the time limit of this study.

The population of the study consists of a complete group of entities sharing some common characteristics. The population of the study consists of all the staff in the two ports (Apapa,636 and Onne, 277). Therefore, the population of the study is 913 staff, distributed as follows:

Lagos Port Complex (Apapa)	= 636
Onne Port	= 277
Total	**= 913**

Source: NPA, (2018)

The sampling technique to be used in this study is the simple random technique. The choice of this method is predicated on the fact that every element in the study shall have equal chance of being studied. The sample elements of the study shall be drawn from the Sipping Managers, Operation Managers, Accountants, Supervisors and Billing Officers. The procedure for sample selection shall first involve the objective selection of the ports' workers active dealing with port operations and terminal activities in the two selected port. The study shall use Prof. Taro Yamane's Sample Size Formula to determine the sample size as follows: $n = N/1+ (e)^2$

Where:

n = Sample Size

N = Population of the Study

e = Level of Significance selected at 5%

Accordingly; the sample size (n) for the study is calculated thus:

$n = 913/1+913(0.05)^2 = 278.1416603198781$ i.e. 279

Sample Size = 279 staff

Data collection is the process of gathering data from either the primary or secondary sources for the purpose of the study analysis. The primary sources consist of first-hand information or raw data obtained by the researcher himself through the administration of research instruments. The secondary sources are existing data obtained from relevant materials such; books, journals, magazines and so on an unpublished work of others as well as valuable documents available to the researcher. Questionnaire was used to elicit data from respondents on whom they will be administered to. In all, the study utilized triangulations approach in the data collection.

In this study, percentages, ratios, frequency distribution, scaling, ranking and other statistical tools were used to analyse and achieve research objectives. Also, Pearson Product Moment Correlation Coefficient (r) and t- test would be used to test the hypotheses formulated in the study. All these analyses shall be computed by using statistical package for social sciences (SPSS) version 22.0.

Results And Discussions

In order to ascertain the extent to which liner shipping as a dimension or component of shipping operations affect container terminal performance, the study used 5 question items on the 5-point scale as shown in Table 2.

Tramp shipping as a Dimension of Shipping operations

Table 3 gives the detailed analysis on how tramp shipping as a dimension of shipping operations has been examined to determine its effect on container terminal performance and to show its descriptive statistical outcome based on the questions deposed.

Table 3: Tramp shipping as a Dimension of Shipping operations

S/N	Question Items on Tramp shipping	N	$\bar{X}$	SD
1	To what extent is tramp shipping used to achieve shipping objective?	222	3.391	1.004
2	To what extent are your port's staff very strict in attending to customers in order to achieve container terminal performance?	222	3.247	1.040
3	To what extent does efficiency offer veritable opportunities to optimize capacity in shipping activities?	222	3.490	0.954
4	To what extent does your port introduce any product or service in order to encourage container terminal performance?	222	3.058	1.093
5	To what extent do customers talk good about your port's willingness to use the best container terminal instruments/facilities for the port to succeed?	222	3.351	0.989

Source: Survey Data, 2020, and IBM SPSS Statistics 22 Window Output

Keys: VLGE = very large extent, LGE = large extent, MDE= moderate extent, LWE = low extent, VLWE: very low extent, S.D: standard deviation.

Table 3 shows that five question items represent a dimension in the 5-point scale. The data revealed that with the mean and standard deviation scores of 3.391±1.004, the respondents agreed that to a large extent tramp shipping is used to achieve shipping objectives. Also, with the mean and standard deviation scores of 3.247±1.040, the respondents agreed that to a large extent staff are very strict in attending to customers in order to encourage container terminal performance. The data also revealed that the respondents agreed that to a large extent efficiency offer veritable opportunities to optimize capacity in shipping activities with the mean and standard deviation scores of 3.490±0.954. With the mean and standard deviation scores of 3.058±1.093 the respondents indicated that to a moderate extent ports introduce any product or service in order to encourage container terminal performance. Finally, the data in Table 3 revealed that with the mean and standard deviation scores of 3.351±1.098, the respondents agreed that to a moderate extent customers talk good about port's willingness to use the best container terminal instruments/facilities for the port to succeed.

Cargo throughputs as a Measure of Container terminal performance

Table 4 shows the descriptive statistical results on cargo throughputs which is measured with five question items on the 5-point scale. The response distribution as shown by the results is indicative that cargo throughputs will enhance container terminal performance.

Table 4: Cargo throughputs as a Measure of Container terminal performance

S/N	Question Items on Cargo throughputs	N	$\bar{X}$	SD
1	To what extent does effective shipping operations boost the container terminal performance of shipping activities?	222	3.396	0.972
2	To what extent are you always involved in important shipping activities that improve container terminal performance?	222	3.427	1.114
3	To what extent does your supervisor consider the opinion of others before making important decision that affects cargo throughputs?	222	3.117	1.099
4	To what extent do senior shipping staff discuss issues concerning the increase of cargo throughputs in your port?	222	3.333	1.103
5	To what extent is cargo throughputs often used as a key performance index (KPI) to review the effectiveness and efficiency in your port?	222	3.211	0.991

Source: Survey Data, 2020, and IBM SPSS Statistics 22 Window Output

Keys: VLGE = very large extent, LGE = large extent, MDE= moderate extent, LWE = low extent, VLWE: very low extent, S.D: standard deviation.

Table 4 shows the mean and standard deviation scores of 3.39640±0.972 indicating that the consensus opinion of the respondents revealed an agreement that to a moderate extent effective shipping operations boost the container terminal performance of shipping activities. Also, the mean and standard deviation scores of 3.427±1.114 imply the respondents agreed that to a moderate extent staff are always involved in important shipping activities that improve container terminal performance. The statistical result of 3.117±1.099 (mean and standard deviation scores) show that the respondents agreed that to a large extent supervisors consider the opinion of others before making important decision that affects cargo throughput. Table 4 also reveals the mean and standard deviation scores of 3.333±1.103 implying that the respondents agreed that to a moderate extent senior shipping staff discuss issues concerning the increase of cargo throughputs in ports. Finally, the mean and standard deviation scores of 3.211±0.991 show that the respondents agreed that to a moderate extent cargo throughputs are often used as a key performance index (KPI) to review the effectiveness and efficiency in ports.

Vessel turnaround time as a Measure of Container terminal performance

Table 5 shows how vessel turnaround time as a measure of container terminal performance was examined and empirically expressed through the raising descriptive statistical analysis of 5 question items.

Table 5: Vessel turnaround time as a Measure of Container terminal performance

S/N	Question Items on Allocative Efficiency	N	$\bar{X}$	SD
1	To what extent does your shipping company value giving satisfactory services to customers in order to engage them for patronage leading to vessel turnaround time?	222	3.288	1.045
2	To what extent is vessel turnaround time level often used as a key performance index (KPI) to review the effectiveness and efficiency in your shipping company?	222	3.391	1.004
3	To what extent does your port give rooms for staff to engage customers for the vessel turnaround time	222	2.995	1.044
4	To what extent does your port allow customers to make variety of choices through appropriate service engagements that elicit vessel turnaround time	222	3.009	0.983
5	To what extent do staff in your ship have the requisite skills to engage customers for the increased vessel turnaround time of the of the port	222	3.211	1.123

Source: Survey Data, 2020, and IBM SPSS Statistics 22 Window Output
Keys: VLGE = very large extent, LGE = large extent, MDE= moderate extent, LWE = low extent, VLWE: very low extent, S.D: standard deviation.

As shown in Table 5 above, the responses of the respondents have indicated the mean and standard deviation scores of 3.288±1.045 showing that to a moderate extent shipping companies value giving satisfactory services to customers in order to engage them for patronage leading to vessel turnaround time. Also, the mean and standard deviation scores of 3.391±1.004 imply that the respondents agreed that to a moderate extent vessel turnaround time level is often used as a key performance index (KPI) to review the effectiveness and efficiency of shipping companies.

With the mean and standard deviation scores of 2.995±1.044, the respondents have indicated that to a moderate extent port give rooms for staff to engage customers for the vessel turnaround time. Table 5 shows the mean and standard deviation scores of 3.009±0.983 proving that the respondents indicated that to a moderate extent ports allow customers to make variety of choices through appropriate service engagements that elicit vessel turnaround time. Finally, the data revealed the mean and standard deviation scores of 3.211±1.123 indicating that to a moderate extent ships have the requisite skills to engage customers for the increased vessel turnaround time in ports.

Statistical Test of Hypotheses and their Interpretation

In the previous sections, we have explored a descriptive univariate analysis of all the data generated from field, which were done through the application of SPSS window output, version 20.0 in such text, descriptive analysis on the study variables was also done, using frequencies, arithmetic percentages, means, standard deviation and variances. These have guided us, as well as, given us the lime-light to delve into the inferential statistical testing of stated hypotheses in the present section. Having done with the exploration of the univariate analysis in the previous section, we now delve into the bivariate tests analysis, since more than one group is involved, and we want to test hypotheses that compared the means of one group with the mean of another group.

However, considering the nature of the study, which involves the test of association, the variables involved and the data measurement scale used, we adopted and applied the Pearson Correlation Coefficient for the bivariate correlation relationship analysis. Nevertheless, in carrying out this analysis and respective correlation results decision interpretation, we armed to guide ourselves with Salkind (2010) decision scale frame.

To determine the relationships that exist between these variables, we formulated the following hypotheses:

Ho_1: There is no significant relationship between tramp shipping and cargo throughputs of Apapa and Onne Ports.

Ho_2: There is no significant relationship between tramp shipping and vessel turnaround time.

of Apapa and Onne Ports.

Table 6: Results of Shipping Operation (SO) and Container Terminal Performance (CTP)

Statistics	HO_1	HO_2
	TS (CT)	TS (VTT)
Pearson correlation	0.823**	0.867**
Sig (2-tailed)	.000	.000
N	222	222

**correlation is significant at the 0.05 level (2-tailed)
Source: *Research Data 2019, and SPSS Window Output, Version 22.0*

Table 6 above shows the results of the test of hypothesized statements, Ho_1, Ho_2, Ho_3 and Ho_4. The results of the hypotheses tested showed positive relationships. For tramp shipping and cargo throughputs (H_{O1}) the rho outcome of 0.823 @ p0.000 <0.05 means that a positive relationship exists between the examined variables and it is also significant. This implies that the null hypothesis as stated is rejected and the alternate is accepted. In the case of tramp shipping and vessel turnaround time which is H_{O2} the r outcome of 0.867 @ p0.000 < 0.05, it shows a weak positive and significant relationship among the examined variables. The null hypothesis in this instance is also rejected. It also implies rejection of the null hypothesis earlier stated.

From the inferential analysis so far, it can be stated that:

1. Tramp shipping as a dimension of shipping operation has a positive and significant relationship with cargo throughputs as a measure of container terminal performance.
2. Tramp shipping as a dimension of shipping operation has a positive and significant relationship with vessel turnaround time as a measure of container terminal performance.

Summary of quantitative findings

Table 7: Summary of the Results on Test of the Research Hypotheses

Research Hypotheses	rho- value	Significant/ Probability Value	Result	Decision
Ho_1: Tramp shipping has significant effect on cargo throughputs	0.823	0.000	Positive and significant relationship	Reject
Ho_2: Tramp shipping has no a significant effect vessel turnaround time	0.867	0.000	Positive and Significant relationship	Accept

Source: Research Data 2019, and IBM SPSS Statistics 22 Window Output

Table 7 has revealed in summary that the study rejected hypotheses: Ho_1 - Tramp shipping has significant relationship with cargo throughputs; Ho_2 - Tramp shipping has significant relationship with vessel turnaround time.

Discussion of Findings (Tramp Shipping and Container Terminal Performance of Apapa and Onne Ports)

The findings of the study revealed that shipping operators engage in container terminal activities in order to improve on cargo throughputs and vessel turnaround time. A critical appraisal of the finding reveals that tramp shipping has positive and significant relationship with cargo throughputs (rho-value = 0.823). There is positive and significant relationship between tramp shipping and vessel turnaround time (rho-value = 0.867). In all, shipping operations have strong positive and significant relationship with cargo throughputs and vessel turnaround time. The full import of this finding is that maritime sector operators work diligently to achieve container terminal performance objectives (Roso & Lumsden, 2010). Tramp shipping is being extensively used by ports in collaboration with other shipping operational tools, as they can be integrated with nearly every other device or strategy to maintain cargo throughputs. Every shipping operator with a foresight for success and sustainable development tries to participate in tramp shipping that transcends the prevailing objectives of companies and organisations towards cargo throughputs for profitability. In many cases shipping companies introduce tramp shipping that aims at linking serious customers with logistics operators for effective and efficient performance by making goals explicit and emphasizing profit maximization, (Yap & Lam, 2013).

The study found that tramp shipping offers veritable opportunities to optimize shipping operations as it helps to build cargo throughputs and berthing efficiency as well as vessel turnaround time in Nigerian ports. The implication of this finding is that ports and shipping companies successfully use tramp shipping, liner shipping, bulk shipping and industry shipping to execute shipping operations that lead to cargo throughputs and profitability (Onyema, Ahmodu & Emeghara, 2015). In asserting this position, Acciaro and Serra (2013) insist that tramp shipping now largely falls under the remit of highly interactive shipping activities that differ little from traditional policy of tool and private port operations.

The findings of this study agree substantially with the works of Emeghara and Ndikom (2012) who analysed the delay factors of Nigerian seaports using Apapa ports complex, Lagos as a case study. Emeghara and Ndikom (2012) found that most delays in shipping operations are occasioned by inadequacies of berths, lack of cargo handling equipment, lack of manpower, scarcity of skilled manpower, administrative bottleneck, deliberate attempt by port workers to extort money from port users, lack of storage facilities, insufficient depth of the entry channels, too many public holidays and strikes and too much idle time due to equipment break down and absence of night operations. These factors were found to be instrumental to adverse shipping operations with reference to container terminal performance in Apapa and Onne ports.

Also, Adeniji (2011) observes that the goal of tramp shipping is to create confidence among all the

stakeholders in the organisation. For the two surveyed ports, there are key targets, the optimum cargo throughputs agen dum and the efficient vessel turnaround time mark, the study has revealed.

Emeghara, Theophilus and Nwoloziri (2018) collaborated this, when they posited that the growing interest of ports in attracting container traffic is a healthy indicator of likely developments in the 21st century. The micro economic objective of ports is to maximise traffic volume and diversification. Nowhere is this more possible than in the container trade with its opportunities of scale. This leads to competition with each port trying to capture its neighbour's market share, recover lost traffic, or accommodate larger ships. The achievement of this objective, is often hampered by the cost and the macro-economic policies prevailing over the ports. This study agrees with their positions.

The study also found that ports and maritime companies introduce tramp shipping in their transportation platforms in order to elicit good container terminal performance outcome. Therefore, shipping operators are capitalizing on this new trend to present their new operational strategy through digital compliant staff who have mastery in tramp shipping intricacies for optimum cargo throughputs and efficient vessel turnaround time. Eniola (2014) in this respect argues that stuffing and prescribing of tramp shipping by shipping operators offer a clear picture of how tramp and liner shipping seek to project, promote and propel the stakeholders' interest. For dynamic companies, tramp shipping could best be described as "look at us" for best shipping operations in container terminals.

Summary

This study investigated the relationship between shipping operations and container terminal performance of Apapa and Onne ports, Nigeria. Two dimensions of shipping operations (independent variables or predictor variables) namely; tramp shipping and liner shipping have been examined. Also, container terminal performance served as the key dependent variable or criterion variable under which the measures such as cargo throughputs and vessel turnaround time have been appraised. The population of the study consisted of the staff in the two ports (Apapa,636 and Onne, 277), that is 913 staff and the study sampled 279 respondents out of which 222 of them were found useful and valid foe the study analysis. The study used Pearson Products Moment Correlation Coefficient (r) to test the hypotheses with the aid of SPSS 22.0. The reliability of the research instrument was tested using the Cronbach alpha to ascertain the reliability of the instrument.

The study found that port operational model (s) used for container terminal activities include tramp shipping, liner shipping, bulk shipping and industry shipping. The study revealed that the main objectives for port operation in carrying out container terminal activities include shipping development, strategy to achieve prompt services, customer satisfaction, effective services, efficient services, customer attraction and profit motives.

The study found that tramp shipping is used to achieve shipping objectives, port's staff are very strict in attending to customers in order to achieve container terminal performance, efficiency offers veritable opportunities to optimize capacity in shipping activities, ports introduce any product or service in order to encourage container terminal performance and customers talk good about port's willingness to use the best container terminal instruments/facilities for the port to succeed.

The study observed that liner shipping offers veritable opportunities for shipping operations in ports, quality of staff inputs in information engender the liner shipping of ports, passing information about liner shipping leads to the achievement of the expected shipping results in ports, ports give rooms for staff to suggest new ways or approach to liner shipping, liner shipping becomes everybody's business in ports.

The study revealed that effective shipping operations boost the container terminal performance of shipping activities, ship operators are always involved in important shipping activities that improve container terminal performance, port supervisors consider the opinion of others before making important decision that affects cargo throughputs, senior shipping staff discuss issues concerning the increase of cargo throughputs in port and cargo throughputs are often used as a key performance index (KPI) to review the effectiveness and efficiency in ports.

Also, the study found that shipping companies value giving satisfactory services to customers in order to engage them for patronage leading to vessel turnaround time. Vessel turnaround time level is often used as a key performance index (KPI) to review the effectiveness and efficiency in shipping companies, ports give rooms for staff to engage customers for the vessel turnaround time, ports allows customers to make variety of choices through appropriate service engagements that elicit vessel turnaround time and staff in ship companies have the requisite skills to engage customers for the increased vessel turnaround time of the of the port.

Conclusion

The conclusions of this study provide holistic outcomes of the study. The study revealed that the perception of the respondents on how shipping operations are perfected vis-à-vis container terminal performance. The hypotheses tested indicate that there

is a significant relationship between the dimensions of shipping operations and measures of container terminal performance. The conclusions of the outcome of the study also include the following ways:

1. Tramp shipping has a positive and significant relationship with cargo throughputs of Apapa and Onne Ports.
2. Tramp shipping has a positive and significant relationship with vessel turnaround time of Apapa and Onne Ports.

Recommendations

Based on the findings and the conclusions drawn in this study the following recommendations have been made:

1. Cargoes and passengers should be managed in most efficient manner through the use of tramp shipping so as to ensure optimum cargo throughputs in Nigerian ports.
2. Nigerian ports should be operated on cost effective and efficient manner through putting in place effective tramp and liner shipping operations so that they will continuously contribute to optimal cargo throughputs and vessel turnaround time leading to revenue growth.
3. Government and other stakeholders should expand the existing shipping operation models so as to enhance current container terminal capacity to accommodate more cargoes and vessels.
4 Operators' performance should be appraised constantly in order to ensure that the maritime sector is positioned to achieve the stakeholders' objectives in Nigerian ports

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Appendix D: SPSS Output of Shipping Operations and Container Terminal Performance of Apapa and Onne Ports

Computing Pearson Product Moment Correlation Coefficient Between Tramp Shipping (X) And Cargo Throughput (Y) At The Nigeria Ports

The stated hypotheses are as follows:

H_0: $\rho_s = 0$: There is no significant correlation between tramp shipping and cargo throughput at the Nigeria Ports;

H_1: $\rho_s \neq 0$: There is a significant correlation between tramp shipping and cargo throughput at the Nigeria Ports;

Correlations

		TRAMP SHIPPING	CARGO THROUGHPUTS
TRAMP SHIPPING	Pearson Correlation	1	.823**
	Sig. (2-tailed)		.000
	N	222	222
CARGO THROUGHPUTS	Pearson Correlation	.823**	1
	Sig. (2-tailed)	.000	
	N	222	222

**. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS ver. 22 Output window

From the SPSS output window, the correlation coefficient of the variables x and y is 0.823

Interpretation

This positive large value of *r* (= 0.823) says that there is a strong positive correlation between tramp shipping (x) and cargo throughputs (y) in the sample.

Because of the positive value of *r* direction is said to be the same: That is, as one increases, the other also increases.

Since the p-value (= 0.000) is less than the level of significance, α (= 0.05), we therefore, reject the null hypothesis and conclude that:

H_1: $\rho_s \neq 0$: There is a significant correlation between tramp shipping and cargo throughput at the Nigeria Ports;

Computing Pearson Product Moment Correlation Coefficient Between Tramp Shipping (X) And Vessel Turnaround Time (Y) At The Nigeria Ports

The stated hypotheses are as follows:

H_0: $\rho_s = 0$: There is no significant correlation between tramp shipping and vessel turnaround time at the Nigeria Ports;

H_1: $\rho_s \neq 0$: There is a significant correlation between tramp shipping and vessel turnaround time at the Nigeria Ports;

Correlations

		TRAMP SHIPPING	VESSEL TURNAROUND TIME
TRAMP SHIPPING	Pearson Correlation	1	.719**
	Sig. (2-tailed)		.000
	N	222	222
VESSEL TURNAROUND TIME	Pearson Correlation	.719**	1
	Sig. (2-tailed)	.000	
	N	222	222

**. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS ver. 22 Output window

From the SPSS output window, the correlation coefficient of the variables x and y is 0.719

Interpretation

This positive large value of *r* (= 0.719) says that there is a strong positive correlation between tramp shipping (x) and vessel turnaround times (y) in the sample.

Because of the positive value of *r* direction is said to be the same: That is, as one increases, the other also increases.

Since the p-value (= 0.000) is less than the level of significance, α (= 0.05), we therefore, reject the null hypothesis and conclude that:

H_1: $\rho_s \neq 0$: There is a significant correlation between tramp shipping and vessel turnaround time at the Nigeria Ports.

1/25/2020